

§ 59.10-20

condition, the nuts may be replaced with a beveled collar formed around the end of the stay by means of welding. In such cases, the depth of collar measured on the stay and the width measured on the plate, shall be equal to one-half the diameter of the staybolt.

§ 59.10-20 Patches in shells and tube sheets.

(a) Unreinforced openings in the shells or drums of boilers or pressure vessels, the diameter of which does not exceed the maximum diameter of an unreinforced opening in accordance with § 52.01-100 of this subchapter may be closed by the use of a patch or plate inside the drum or shell and sealed against leakage by welding. Such plates shall have a diameter of at least 2 inches larger than the diameter of the hole and shall have a thickness equal to the thickness of the plate to which it is attached. It is not permissible to insert such patches in the shell or head flush with the surrounding plate unless the requirements of this subchapter for Class I welded pressure vessels are met.

(b) Portions of tube sheets which have deteriorated may be renewed by replacing the wasted portion with a new section. The ligaments between the tube holes may be joined by means of welding and staytubes. Other acceptable means of lowering the stress on the repaired section may be used if in the judgment of the Officer in Charge, Marine Inspection, it is necessary.

§ 59.10-25 Stayed areas.

Welding repairs are permitted in staybolted areas or areas adequately stayed by other means so that should failure of the welds occur the stress will be carried by the stays. The welds shall be located entirely within staybolted areas and shall not pass through the outer row of stays.

§ 59.10-30 Seal welding.

Where leaks occur in riveted joints or connections, they shall be carefully investigated to determine the cause. Such leaks may be made tight by seal welding the edge, if, in the opinion of the Officer in Charge, Marine Inspec-

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tion, this will make a satisfactory repair.

§ 59.10-35 Wrapper plates and back heads.

Wrapper plates and back heads may be renewed in whole or repaired as follows:

(a) Wrapper plates or backs heads shall be cut between two rows of staybolts or on a line of staybolts where the thickness is approximately the same as the original construction. If welding is employed on a line of staybolts, the staybolts shall be fitted with a welded collar as required by Figure 52.01-3 of this subchapter.

(b) The edges of wrapper plates riveted to tube sheets and back heads shall be removed by cutting out the rivets.

(c) The edges of existing plates and new plates shall be beveled by chipping, flame cutting or grinding so as to form a suitable groove whereby complete penetration of the weld metal will be obtained. The edge preparation and preheat shall comply with the requirements of § 59.10-5(h).

(d) The edges of the new plate shall be butt welded and the plate shall be riveted to the flanges of the tube sheet and back heads and the staybolts renewed.

(e) Sections of wrapper plates of combustion chambers outside of stayed areas may be repaired by welding provided the welded joints are stress-relieved by means of controlled heat and the joints are nondestructively tested.

Subpart 59.15—Miscellaneous Boiler Repairs

§ 59.15-1 Furnace repairs.

(a) Where corrugated or plain furnaces or flues are distorted by 1½ inches or more, they shall be repaired by either of the following methods:

(1) The furnace shall be forced back to a true circular shape, and the Officer in Charge, Marine Inspection, may require strongbacks or other acceptable means of support to hold the furnace from future collapse, if in his opinion such support is necessary; or,